

REMARKS

This communication is a full and timely response to the aforementioned final Office Action dated October 16, 2008. By this communication, claim 10 has been amended, and claims 19 and 20 are added. Claims 11-18 are not amended and remain in the application. Thus, claims 10-20 are pending in the application. Claim 10 is independent.

Reconsideration of the application and withdrawal of the rejections of the claims are respectfully requested in view of the foregoing amendments and the following remarks.

I. 35 U.S.C. § 103 Rejections

A. Claims 10, 12, 15, 17, and 18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Mahajan (U.S. Patent No. 5,404,528) in view of Cassagnol et al. (U.S. Patent No. 6,438,666, hereinafter "Cassagnol").

Without acquiescing to this rejection, independent claim 10 has been amended to emphasize distinctions between the claimed invention and the applied references. Applicants respectfully submit that the claimed invention is patentable over the applied references for at least the following reasons.

Device servers for connecting a device that has only a serial port to a computer network have been conventionally developed. For example, the vast majority of console ports that are provided on network appliances for making settings are serial ports. Serial ports have conventionally been connected via a device server to a network, such as the Internet, and a protocol is converted by the device server so that the console part of the network appliance can be accessed via the network and a parameter file can be set. Although a device server has conventionally been designed to convert a protocol and transfer data for a particular peripheral device connected to the device server, the interface controller chip of the device server will differ depending on the type of protocol to be converted, and therefore, it has been conventionally necessary to use different device servers for different peripheral devices. The same drawback occurs for device servers connected to peripheral devices that have parallel, analog and digital interface ports, for example.

Accordingly, it has been conventionally necessary to develop independent device servers for each peripheral device connectable to a device server due to the need to convert a protocol used by the peripheral device. Even if it is possible to access a peripheral device from a computer terminal via a network, unless an application is developed to display and decode the data obtained from the peripheral device, it will not be possible to output or use the target device and communicate the data across the network. Even if it is possible to install functions for handling data according to many different protocols, it will not be possible to install all of the functions for determining processing and/or operations between interfaces of various peripheral devices or to install all the control logic required to do so in advance for such peripheral devices.

With reference to Figure 1, for example, exemplary embodiments of the present invention provide a multipurpose semiconductor integrated circuit device 10 that makes it possible to connect a variety of appliances and devices (e.g., peripheral devices) to a network easily and at low cost, and to make it easy to view the output of a variety of appliances using a browser, for example. In addition, the exemplary embodiments provide a multipurpose semiconductor integrated circuit device 10 that improves user programmability of a chip level or integrated circuit device level, and allows a user to change application programs of the chip.

With reference to Figure 1, the exemplary multipurpose semiconductor integrated circuit 10 includes a plurality of types of input/output interfaces 11-19. With reference to Figures 2 and 3, for example, the multipurpose semiconductor integrated circuit 10 of the disclosed embodiment is configured to control access to a non-volatile memory 23 that includes a file storage region for storing a script file 76 and firmware 60 in a non-volatile manner.

The firmware 60 includes program modules for functioning of an application layer. The script file 76 enables users to define, using script language, processes relating to data inputted and/or outputted through the plurality of types of input/output interfaces 11-19 for various appliances and/or peripheral devices. Thus, a user can generate, update and/or modify script files to be compatible with various applications used by the multiple semiconductor integrated circuit 10 and various peripheral

devices connectable to the interfaces 11-19 of the multiple semiconductor integrated circuit, without being required to update firmware, which is conventionally required.

The exemplary embodiments provide that the script file 76 and firmware 60, which includes program modules for functions of an application layer, are stored at the same level, i.e., in the file storage region of the non-volatile memory 23. The exemplary multipurpose semiconductor integrated circuit 10 allows users to modify, update or rewrite the script file 76 on the same level as the firmware 60, but without exposing the firmware. By providing the user access to the script file 76, the user can access the script file 76 using one or more of the types of input/output interfaces 11-19 to manipulate, update and/or maintain user logic, through open access and generation. Nevertheless, the firmware 60 is prevented from being exposed.

For instance, as illustrated in Figures 3 and 5, for example, the exemplary multipurpose semiconductor integrated circuit 10 includes a file management system 70 that admits access to the file storage region of the non-volatile memory 23 to manipulate script files relating to data inputted and/or outputted through any of the types of input/output interfaces 11-19, without exposing the firmware 60 to the user. In particular, the file management system 70 is configured to allow a user to manipulate the script file 76 stored in the file storage region in an exposed state without exposing the firmware stored in the file storage region.

Accordingly, the disclosed embodiments provide that access to the script file is open and made available so as to adjust the processes relating to data input and/or output through any of the types of interfaces 11-19, without exposing the firmware.

Claim 10 recites various features of the above-described exemplary embodiments. In particular, the multipurpose semiconductor integrated circuit device of claim 10 comprises a non-volatile memory including a file storage region for storing a script file and firmware in a non-volatile manner. Claim 10 recites that the firmware includes program modules for functioning of an application layer, and the script file defines, using script language, processes relating to data inputted and/or outputted through the plurality of types of input/output interfaces with the program modules.

In addition, the multipurpose semiconductor integrated circuit device of claim 10 comprises a file management system that admits access to the file storage region of the flash memory through at least one of the plurality of types of input/output interfaces. The file management system is configured to allow a user to manipulate the script file stored in the file storage region in an exposed state without exposing the firmware stored in the file storage region.

As acknowledged by the Office, Mahajan does not disclose or suggest the non-volatile memory and file management system as recited in claim 10. In particular, Mahajan does not disclose, suggest or contemplate both (1) a non-volatile memory storing a script file and firmware, and (2) a file management system configured to allow a user to manipulate the script file stored in the file storage region in an exposed state without exposing the firmware stored in the file storage region.

In an attempt to arrive at the subject matter of claim 10, the Office applied Cassagnol, even though Cassagnol is technically opposed to the subject matter of claim 10 and the Office's proposed modification of Mahajan to arrive at the subject matter of claim 10.

Cassagnol discloses an apparatus 10 (see Fig. 1) that provides a secure environment for preventing the content of sensitive information, which can be decrypted, processed and re-encrypted in the apparatus 10, from being exposed outside the apparatus 10 (see Column 5, lines 14-33).

However, in contrast to Cassagnol, claim 10 recites that the file management system 10 provides access to the storage region to allow a user to manipulate the script file stored in the file storage region in an exposed state without exposing the firmware stored in the file storage region. Accordingly, the file management system 10 provides access to a script file, which defines processes relating to data inputted and/or outputted through the plurality of types of input/output interfaces, to make such sensitive information available to the user. On the contrary, Cassagnol aims to prevent access to any sensitive information, or "from revealing sensitive information indicative of operations being performed by the apparatus 10 and/or of the information being processed by the apparatus 10" (see Column 6, lines 52-56). Therefore, it is unclear why Cassagnol is applied by the Office in an attempt to cure

the significant deficiencies of Mahajan for failing to disclose or suggest all the recited features of claim 10.

The Office's comments pertaining to its application of Cassagnol are addressed hereinafter.

With reference to Figure 2 and Column 6, lines 18-38 of Cassagnol, the Office asserted that "Cassagnol discloses a non-volatile memory 14, which stores code." However, the non-volatile memory 14 is not used to store firmware and script files. Furthermore, the non-volatile memory 14 is not controlled by the access logic 34 or memory management unit 38. On the contrary, the memory management unit 38 manages the volatile internal memory 18 and the volatile external SDRAM memory 24 (see Column 14, lines 48-67). The sensitive information which may be encrypted is stored in the volatile internal read/write memory 18 (see Column 6, line 65 to Column 7, line 6).

Therefore, similar to Mahajan, Cassagnol does not disclose or suggest a file management system for managing a non-volatile memory storing a script file and firmware.

With reference to Column 7, line 39 to Column 8, line 6, the Office asserted that "Cassagnol discloses the apparatus is provided with authentication algorithms relying on MAC values...and the contents of memory may be updated by the processor to develop a new CBC-MAC value and write this new value to a memory for future authentication use." However, the above-referenced portions of Cassagnol pertain to the storage of CBC-MAC values in the volatile internal read/write memory 18, not the non-volatile memory 14. The above-referenced portions of Cassagnol do not, in any way, disclose or suggest a file management system for managing a non-volatile memory on which a script file and firmware are stored. Furthermore, the above-referenced portions do not have any relationship to programs or script files for I/O processes.

In addition, with reference to Figures 2 and 3, the Office also asserted that "Cassagnol discloses memory management unit 38 and EEPROM access logic 34." However, the memory management unit 38 controls the volatile internal read/write memory 18, not the non-volatile memory 14 (see Column 14, lines 48-67), whereas the EEPROM access logic 34 accesses the EEPROM 32 to determine if confidential

data is stored thereon, but cannot manipulate any of such confidential data or else it would destroy it (see Column 11, lines 37-47 and Column 12, lines 20-40). The EEPROM 32 stores keys for cipher 20 as confidential data (see Column 16, lines 8-23).

Accordingly, in contrast to claim 10, Cassagnol does not disclose or suggest a file management system for managing a non-volatile memory storing a script file and firmware, where the file management system is configured to allow a user to manipulate the script file stored in the file storage region in an exposed state without exposing the firmware stored in the file storage region.

With reference to Column 5, lines 48-51 and Column 6, lines 4-5, the Office asserted that "Cassagnol discloses not exposing firmware to a user outside of a secure environment...and the security of the software or firmware is always maintained." The actual disclosure of the above-referenced portions is as follows: "In such applications, the illustrated apparatus 10 can decrypt, execute and re-encrypt sensitive software (or firmware) without exposing the decrypted instructions outside the secure environment." Accordingly, Cassagnol discloses that the decrypted instructions relating to the firmware cannot be exposed, but the firmware can be exposed in the encrypted state (see Column 5, lines 50-55).

Therefore, if there is any reasonable relationship between Cassagnol and the subject matter of claim 10, the "decrypted instructions" would have to correspond to the "script file" as recited in claim 10. However, in stark contrast to Cassagnol, claim 10 recites that the file management system allow a user to manipulate the script file stored in the file storage region in an exposed state without exposing the firmware stored in the file storage region. On the other hand, the purpose of Cassagnol is how to encrypt and decrypt the sensitive information in a decrypted state and hide the sensitive information.

Accordingly, in contrast to claim 10, Applicants respectfully submit that Cassagnol does not disclose or suggest a file management system for managing a non-volatile memory storing a script file and firmware, where the file management system is configured to allow a user to manipulate the script file stored in the file storage region in an exposed state without exposing the firmware stored in the file storage region.

Consequently, Cassagnol cannot cure the deficiencies of Mahajan for failing to disclose or suggest all the recited features of claim 10.

Therefore, Applicants respectfully submit that no obvious combination of Mahajan and Cassagnol would arrive at the subject matter of claim 10, since Mahajan and Cassagnol, either individually or in combination, fail to disclose or suggest all the recited features of claim 10.

Furthermore, in view of the distinctions discussed above, Applicants respectfully submit that there is no reason or motivation to destructively modify Mahajan with the contradictory teachings of Cassagnol. If the Office intends to interpret Mahajan as disclosing that the scripts in memory 120 (see Fig. 2) are supposed to be manipulatable, or if the Office intends to modify Mahajan even further with yet another reference purportedly disclosing manipulatable script files, then Cassagnol would preclude such a combination, because the purpose of Cassagnol is to hide any information related to firmware. Therefore, Applicants respectfully submit that there is no cognizable reason for modifying Mahajan with Cassagnol in an attempt to arrive at the subject matter of claim 10.

Accordingly, for at least the foregoing reasons, Applicants respectfully submit that claim 10 is patentable over the applied references.

B. Dependent Claim 11 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Mahajan in view of Cassagnol and further in view of Steinberg et al. (U.S. Patent No. 6,628,235, hereinafter "Steinberg"). Dependent claims 13 and 14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Mahajan in view of Cassagnol, and further in view of Steinberg and Herrero et al. (U.S. Patent Application Publication No. 2004/0133626, hereinafter "Herrero"). Furthermore, dependent claim 16 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Mahajan in view of Cassagnol and further in view of Kaji (Japanese Patent Application No. 2003-108539).

As demonstrated above, Mahajan and Cassagnol, either individually or in combination, do not disclose or suggest the combination of the non-volatile memory and file management system as recited in claim 10.

Similarly, Steinberg, Herrero and Kaji each fail to disclose or suggest the non-volatile memory and file management system of claim 10.

Consequently, Steinberg, Herrero and Kaji do not cure the deficiencies of Mahajan and Cassagnol for failing to disclose or suggest all the recited features of claim 10. Therefore, Applicants respectfully submit that no obvious combination of Mahajan, Cassagnol, Steinberg, Herrero and Kaji would result in the subject matter of claim 10, since these references, either individually or in combination, do not disclose or suggest all the recited features of claim 10.

Accordingly, for at least the foregoing reasons, Applicants respectfully submit that claim 10, as well as claims 11-20 which depend therefrom, are patentable over the applied references.

Dependent claims 11-20 recite further distinguishing features over the applied references. The foregoing explanation of the patentability of claim 10 is sufficiently clear such that it is believed to be unnecessary at this time to separately demonstrate the patentability of the dependent claims. Applicants reserve the right to so in the future should it be appropriate. Furthermore, Applicants do not acquiesce to the veracity of any of the Office's assertions not specifically addressed above.

II. Conclusion

In view of the foregoing amendments and remarks, it is respectfully submitted that the present application is clearly in condition for allowance. Accordingly, Applicants request a favorable examination and consideration of the instant application.

If, after reviewing this Amendment, the Examiner believes there are any issues remaining which must be resolved before the application can be passed to issue, the Examiner is respectfully requested to contact the undersigned by telephone in order to resolve such issues.

Respectfully submitted,

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